

Amendments to the Claims

1-39. (Cancelled)

40. (Previously presented) An optical audio disc having an area storing an audio title set (ATS), the audio title set (ATS) including data representing a digital audio signal resulting from steps including (1) quantizing a first original audio signal at a first sampling frequency (fs1), (2) quantizing a second original audio signal into a quantization-resultant audio signal at a second sampling frequency (fs2), and (3) subjecting the quantization-resultant audio signal to a bit shift, the first original audio signal being in a first channel group having multiple channels, the second original audio signal being in a second channel group having multiple channels, the first sampling frequency (fs1) being assigned to each of the channels in the first channel group, the second sampling frequency (fs2) being assigned to each of the channels in the second channel group, the bit shift having a quantity common to the channels in the second channel group;

the audio title set (ATS) including data representing the first sampling frequency (fs1) and the second sampling frequency (fs2), data representing the quantity of the bit shift and channel assignment information for identifying the channels in the first channel group and the channels in the second channel group;

the area also storing audio manager (AMG) containing data for controlling the digital audio signal and the data for displaying menu of the digital audio signal.

41. (Previously presented) A signal encoding apparatus comprising:

means for generating information; and

means for formatting the information into a data structure;

wherein the data structure has an area containing an audio title set, the audio title set including data representing a digital audio signal resulting from steps including (1) quantizing a first original audio signal at a first sampling frequency, (2) quantizing a second original audio signal into a quantization- resultant audio signal at a second sampling frequency, and (3) subjecting the quantization-resultant audio signal to a bit shift, the first

original audio signal being in a first channel group having multiple channels, the second original audio signal being in a second channel group having multiple channels, the first sampling frequency being assigned to each of the channels in the first channel group, the second sampling frequency being assigned to each of the channels in the second channel group, the bit shift having a quantity common to the channels in the second channel group;

the audio title set including data representing the first sampling frequency and the second sampling frequency, data representing the quantity of the bit shift and channel assignment information for identifying the channels in the first channel group and the channels in the second channel group;

the area also storing audio manager (AMG) containing data for controlling the digital audio signal and the data for displaying menu of the digital audio signal.

42. (Currently amended) An apparatus for decoding the digital audio signal recorded on ~~the optical audio disc of claim 40~~, an optical audio disc having an area storing an audio title set (ATS), the audio title set (ATS) including data representing a digital audio signal resulting from steps including (1) quantizing a first original audio signal at a first sampling frequency (fs1), (2) quantizing a second original audio signal into a quantization-resultant audio signal at a second sampling frequency (fs2), and (3) subjecting the quantization-resultant audio signal to a bit shift, the first original audio signal being in a first channel group having multiple channels, the second original audio signal being in a second channel group having multiple channels, the first sampling frequency (fs1) being assigned to each of the channels in the first channel group, the second sampling frequency (fs2) being assigned to each of the channels in the second channel group, the bit shift having a quantity common to the channels in the second channel group;

the audio title set (ATS) including data representing the first sampling frequency (fs1) and the second sampling frequency (fs2), data representing the quantity of the bit shift and channel assignment information for identifying the channels in the first channel group and the channels in the second channel group;

the area also storing audio manager (AMG) containing data for controlling the digital audio signal and the data for displaying menu of the digital audio signal;

the audio signal being in the first channel group and the second channel group, the apparatus comprising:

means for generating the data representing the first sampling frequency and the second sampling frequency, the data representing the quantity of the bit shift, and the channel assignment information for identifying the channels in the first channel group and the channels in the second channel group; and

means for decoding the digital audio signal in the first channel group and the second channel group in response to the first sampling frequency, the second sampling frequency, the quantity of the bit shift, and the channel assignment information.

43. (Currently amended) A player for reproducing audio contents from ~~the optical audio disc of claim 40~~ an optical audio disc having an area storing an audio title set (ATS), the audio title set (ATS) including data representing a digital audio signal resulting from steps including (1) quantizing a first original audio signal at a first sampling frequency (fs1), (2) quantizing a second original audio signal into a quantization-resultant audio signal at a second sampling frequency (fs2), and (3) subjecting the quantization- resultant audio signal to a bit shift, the first original audio signal being in a first channel group having multiple channels, the second original audio signal being in a second channel group having multiple channels, the first sampling frequency (fs1) being assigned to each of the channels in the first channel group, the second sampling frequency (fs2) being assigned to each of the channels in the second channel group, the bit shift having a quantity common to the channels in the second channel group;

the audio title set (ATS) including data representing the first sampling frequency (fs1) and the second sampling frequency (fs2), data representing the quantity of the bit shift and channel assignment information for identifying the channels in the first channel group and the channels in the second channel group;

the area also storing audio manager (AMG) containing data for controlling the digital audio signal and the data for displaying menu of the digital audio signal;

wherein the optical audio disc which stores the audio signal in the first channel group and the second channel group, the player comprising:

means for generating the data representing the first sampling frequency and the second sampling frequency, the data representing the quantity of the bit shift, and the channel assignment information for identifying the channels in the first channel group and the channels in the second channel group;

means for decoding the digital audio signal in the first channel group and the second channel group in response to the first sampling frequency, the second sampling frequency, the quantity of the bit shift, and the channel assignment information; and

means for implementing digital-to-analog conversion of the decoding- resultant audio signal to recover a corresponding analog audio signal.